WE CLAIM:

1. A method of transporting a high speed Ethernet data stream comprising a sequential series of media access control (MAC) frames and having a data rate of 10Gb/s across a synchronous packet switched network fabric having a line rate of 9.953280 Gbaud, the method comprising the steps of:

   a) providing a synchronous container at a sending interface;

   b) compressing the Ethernet data stream to produce a compressed data stream;

   c) mapping the compressed data stream to the synchronous container; and

   d) launching the synchronous container across the network fabric toward a receiving interface.

2. A method as claimed in claim 1, wherein, the synchronous container comprises:

   a) a line/column frame format conforming to a conventional synchronous optical network (SONET) frame format; and

   b) a stripped transport overhead (TOH).

3. A method as claimed in claim 2, wherein the frame format of the synchronous container conforms to a SONET synchronous transport signal-level 192 (STS-192C) frame format.

4. A method as claimed in claim 3, wherein the stripped TOH comprises only A1 and A2 octets of a conventional SONET frame TOH.

5. A method as claimed in claim 4, wherein the stripped TOH comprises a predetermined number of each of the A1 and A2 octets.

6. A method as claimed in claim 5, wherein the predetermined number is 24 or less.

7. A method as claimed in claim 1, wherein the step of compressing the Ethernet data stream comprises a step of removing an inter-frame gap (IFG) between successive MAC frames.

8. A method as claimed in claim 7, wherein the step of compressing the Ethernet data stream further comprises a step of removing idle MAC frames from the Ethernet data stream.

9. A method as claimed in claim 2, wherein the step of mapping the compressed data stream to the synchronous container comprises adding successive frames of the compressed data stream directly to the SONET/SDH frame.

10. A method as claimed in claim 9, wherein successive MAC frames of the compressed data stream are added to the synchronous container starting immediately following the stripped TOH.

11. A method as claimed in claim 1, wherein the step of launching the synchronous container comprises steps of:

a) inverse multiplexing the synchronous container into a plurality of data streams; and

b) launching each of the data streams into a respective channel of the network fabric.

12. A method as claimed in claim 1, further comprising the steps of:

a) receiving a synchronous container from the sending interface;

b) extracting the compressed data stream from the synchronous container; and

c) decompressing the compressed data stream to recover the original Ethernet data stream.

13. A method as claimed in claim 12, wherein the synchronous container is inverse multiplexed across a plurality of channels of the network fabric, and the step of receiving the synchronous container comprises steps of:

a) receiving a respective data stream through each one of the plurality of channels;

b) aligning each of the received data streams; and

c) multiplexing the aligned data streams to recover the synchronous container.

14. A method as claimed in claim 12, wherein the step of extracting the compressed data stream from the synchronous container comprises the steps of:

a) synchronizing a read clock with the synchronous container; and

b) reading successive MAC frames of the compressed data stream from the synchronous container

starting immediately following a transport overhead (TOH) of the synchronous container.

15. A method as claimed in claim 14, wherein the step of synchronizing a read clock with the synchronous container comprises detecting a transition between A1 and A2 octets of the TOH.

16. A method as claimed in claim 12, wherein the step of decompressing the compressed data stream comprises a step of inserting an inter-frame gap (IFG) between successive MAC frames.

17. A method as claimed in claim 16, wherein the step of inserting an IFG between successive MAC frames comprises the steps of:

a) monitoring a preamble portion of a first MAC frame;

b) reading a length of a data portion of the first MAC frame from the monitored preamble portion, to identify a trailing byte of the first MAC frame; and

c) inserting an idle MAC frame into the compressed stream immediately following the identified trailing byte.

~~18.~~ A method of interfacing a local area network (LAN) having a 10Gb/s data rate and a synchronous packet switched physical network fabric having a line rate of 9.953280 Gbaud, the method comprising steps of:

a) receiving an Ethernet data stream comprising a sequential series of media access control (MAC) frames;

b) compressing the Ethernet data stream; and

c) mapping the compressed Ethernet data stream to a synchronous container of the synchronous packet switched physical network fabric.

19. A method as claimed in claim 18, wherein the synchronous container comprises:

a) a line/column frame format conforming to a conventional synchronous optical network (SONET) frame format; and

b) a stripped transport overhead (TOH).

20. A method as claimed in claim 19, wherein the frame format of the synchronous container conforms to a SONET synchronous transport signal-level 192 (STS-192C) frame format.

21. A method as claimed in claim 19, wherein the stripped TOH comprises only A1 and A2 octets of a conventional SONET frame TOH.

22. A method as claimed in claim 21, wherein the stripped TOH comprises a predetermined number of each of the A1 and A2 octets.

23. A method as claimed in claim 22, wherein the predetermined number is 24 or less.

24. A method as claimed in claim 18, wherein the step of compressing the Ethernet data stream comprises a step of removing an inter-frame gap (IFG) between successive MAC frames.

25. A method as claimed in claim 24, wherein the step of compressing the Ethernet data stream further comprises a step of removing idle MAC frames from the Ethernet data stream.

26. A method as claimed in claim 18, wherein the step of mapping the compressed data stream to the synchronous container comprises adding successive MAC frames of the compressed data stream directly to the synchronous container.

27. A method as claimed in claim 26, wherein successive MAC frames of the compressed data stream are added to the synchronous container starting immediately following the stripped TOH.

28. A method as claimed in claim 18, further comprising the steps of:

a) receiving a synchronous container encapsulating a compressed Ethernet data stream;

b) extracting the compressed Ethernet data stream from the received synchronous container; and

c) decompressing the compressed Ethernet data stream.

29. A method as claimed in claim 28, wherein the step of extracting the compressed Ethernet data stream from the received synchronous container comprises the steps of:

a) synchronizing a read clock with the received synchronous container; and

b) reading successive MAC frames of the compressed Ethernet data stream from the received synchronous container starting immediately following a transport overhead (TOH) of the received synchronous container.

30. A method as claimed in claim 29, wherein the step of synchronizing a read clock with the received synchronous container comprises detecting a transition between A1 and A2 octets of the TOH.

31. A method as claimed in claim 28, wherein the step of decompressing the compressed Ethernet data stream comprises a step of inserting an Inter-frame gap (IFG) between successive MAC frames.

32. A method as claimed in claim 31, wherein the step of inserting an IFG between successive MAC frames comprises the steps of:

a) monitoring a preamble portion of a first MAC frame;

b) reading a length of a data portion of the first MAC frame from the monitored preamble portion, to identify a trailing byte of the first MAC frame; and

c) inserting an idle MAC frame into the compressed Ethernet data stream immediately following the identified trailing byte.

33. An interface for coupling a local area network (LAN) having a 10Gb/s data rate to a synchronous packet switched physical network fabric having a line rate of 9.953280 Gbaud, the interface comprising:

a) means for receiving an Ethernet data stream comprising a sequential series of media access control (MAC) frames;

b) means for compressing the Ethernet data stream; and

c) means for mapping the compressed Ethernet data stream to a synchronous container of the synchronous packet switched physical network fabric.

34. An interface as claimed in claim 33, wherein, the synchronous container comprises:

a) a line/column frame format conforming to a conventional synchronous optical network (SONET) frame format; and

b) a stripped transport overhead (TOH).

35. An interface as claimed in claim 34, wherein the frame format of the synchronous container conforms to a SONET synchronous transport signal-level 192 (STS-192C) frame format.

36. An interface as claimed in claim 34, wherein the stripped TOH comprises only A1 and A2 octets of a conventional SONET frame TOH.

37. An interface as claimed in claim 36, wherein the stripped TOH comprises a predetermined number of each of the A1 and A2 octets.

38. An interface as claimed in claim 37, wherein the predetermined number is 24 or less.

39. An interface as claimed in claim 33, wherein the means for compressing the Ethernet data stream comprises means for removing an inter-frame gap (IFG) between successive MAC frames.

40. An interface as claimed in claim 39, wherein the means for compressing the Ethernet data stream further comprises means for removing idle MAC frames from the Ethernet data stream.

41. An interface as claimed in claim 33, wherein the means for mapping the compressed data stream to the synchronous container comprises means for adding successive MAC frames of the compressed data stream directly to the synchronous container.

42. An interface as claimed in claim 41, wherein successive MAC frames of the compressed data stream are added to the synchronous container starting immediately following the stripped TOH.

43. An interface as claimed in claim 33, further comprising:

a) means for receiving a synchronous container encapsulating the compressed Ethernet data stream;

b) means for extracting the compressed Ethernet data stream from the received synchronous container; and

c) means for decompressing the compressed Ethernet data stream.

44. An interface as claimed in claim 43, wherein the means for extracting the compressed Ethernet data stream from the received synchronous container comprises:

a) means for synchronizing a read clock with the received synchronous container; and

b) means for reading successive MAC frames of the compressed Ethernet data stream from the received synchronous container starting immediately following a transport overhead (TOH) of the received synchronous container.

45. An interface as claimed in claim 44, wherein the means for synchronizing a read clock with the received synchronous container comprises means for detecting a transition between A1 and A2 octets of the TOH.

46. An interface as claimed in claim 43, wherein the means for decompressing the compressed Ethernet data stream comprises means for inserting an Inter-frame gap (IFG) between successive MAC frames.

47. An interface as claimed in claim 46, wherein the means for inserting an IFG between successive MAC frames comprises:

a) means for monitoring a preamble portion of a first MAC frame;

b) means for reading a length of a data portion of the first MAC frame from the monitored preamble portion, to identify a trailing byte of the first MAC frame; and

c) means for inserting an idle MAC frame into the compressed Ethernet data stream immediately following the identified trailing byte.